

# Circular agriculture and supply chains: SG lecture

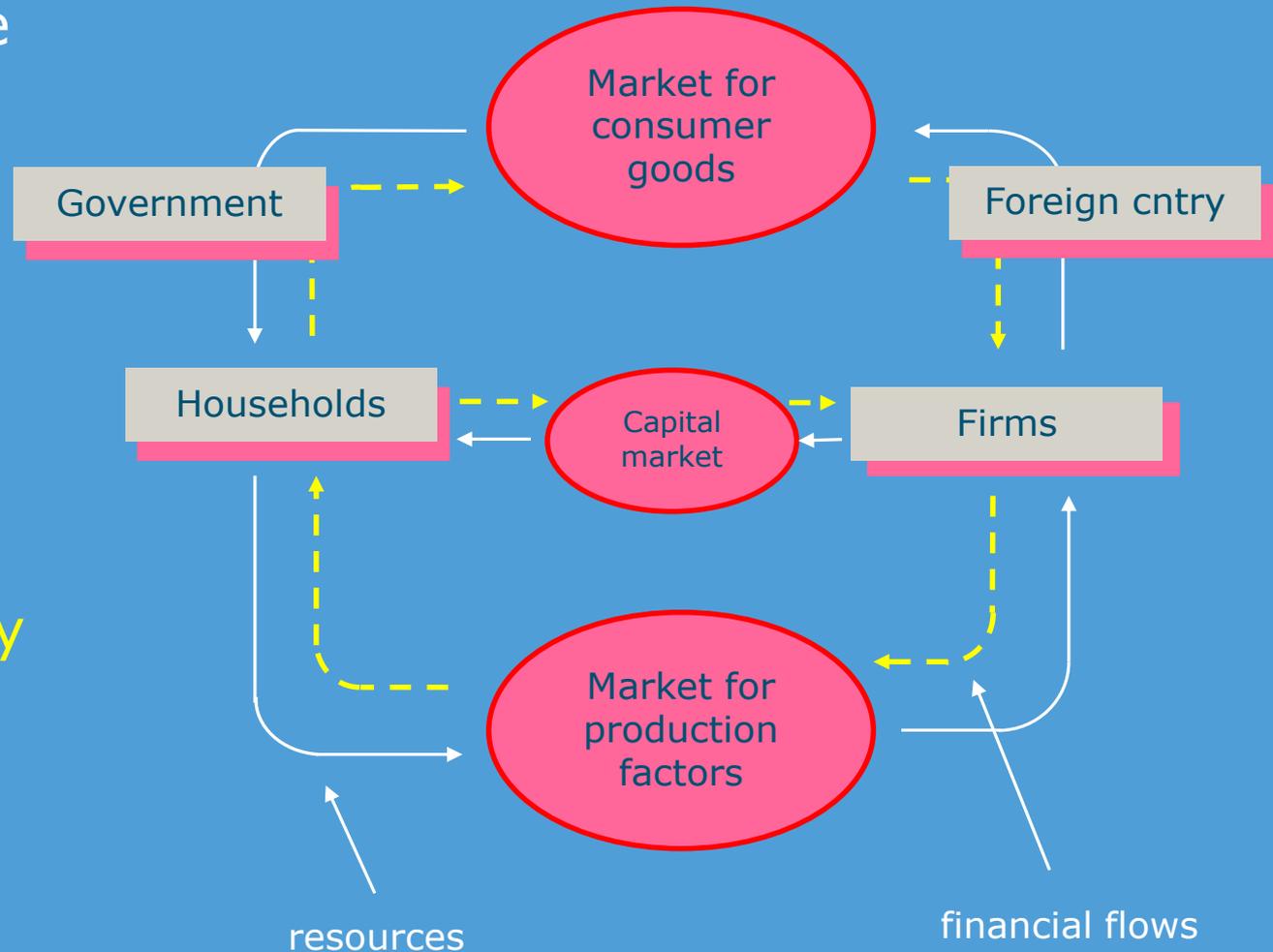
Organizing Responsibility and Profitability in the Food Chain

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# Introduction

- Economists are used to a **circular flow-approach**
- ... but **not embedded** in the ecosystem
- ... the **economy and the environment** need to be aligned



# Set-up

- Starting from a **vision**....
- Aspects and issues (**chains & trade; scale**)
- More reflection on role of **supply chains** (connected circularity)
- CE agriculture and policy (national, CAP)
- Some closing observations



# Starting from a vision

- Ag-Minister Schouten: towards a circular agriculture
- Firms are individually efficient and competitive, but **resource efficiency** of the system is not optimal
- Agriculture has many leakages, wastes and inefficiencies, which is unsustainable and harms ecosystems
- Change required: from **cost-efficiency** to **resource efficiency**
- In **2030** 'cycles' have to be closed as much as possible, at local, national and international level
- Different agricultural **sectors** and different **stages** in the supply chain use each others (by)products



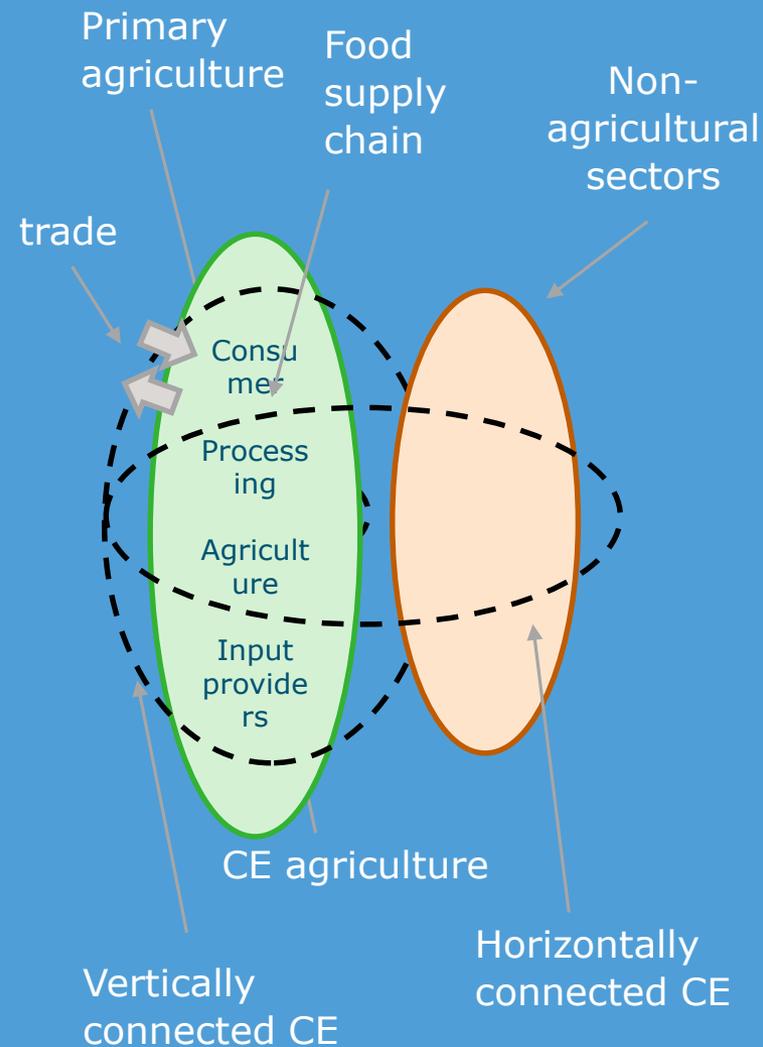
# Starting from a vision

- The **soil** and its proper treatment are the basis for CE agriculture
- **Animal husbandry**: close **feed** nutrient cycles at lowest level, reduce waste and emissions, have low-emission stables, preserve outdoor grazing of dairy cows (an.welf)
- **Arable sector**: **balanced fertilization, soil preservation**, precision agriculture, integrated pest management (minimal chemical use)
- **Horticulture**: has already a high degree of circularity, but further improve w.r.t. **water** and **energy**
- **Nature**: minimize emissions to support nature, and nature supporting agriculture (**nat.-inclusive** agr.)
- **Side-conditions**: agr. entrepreneurship, re-valuation of food, be innovative world-player

# Aspects and issues (S-chains)

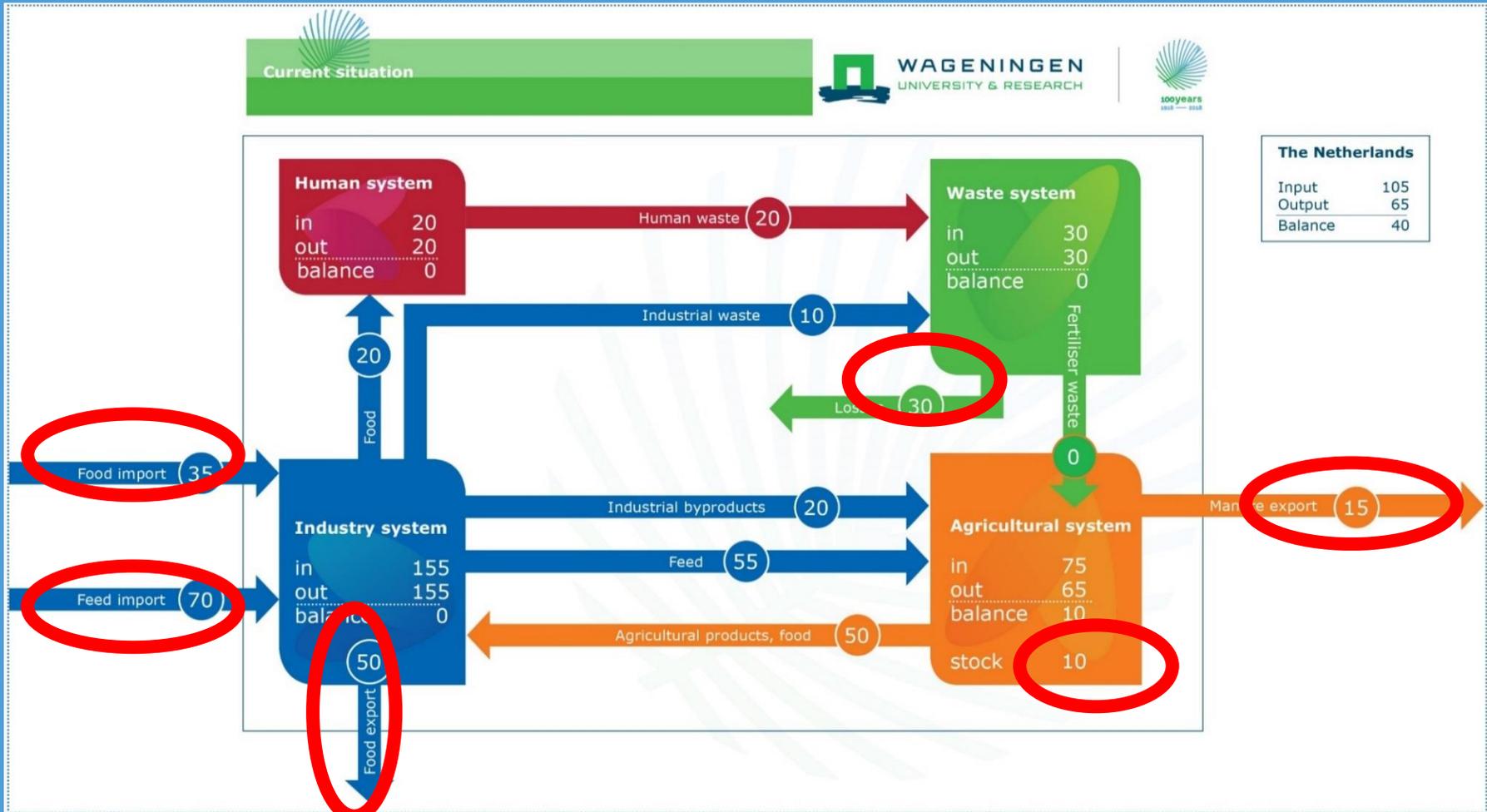
- Include all **stages** of agri-food supply chains
- Include **interactions** of agriculture with other sectors in the economy
- Select **focus points** and develop appropriate indicators
- Design and implement **policies** that support CE agriculture
- Use the **CAP** to support to the maximum extent the national CE-agenda

Follow a food systems / supply chain approach



# Aspects and issues (trade)

- Trade issues need to be more thought through



# Identified “dilemmas” w.r.t. CA/CE and Supply chains

- **Markets** (incentive instruments, performance-based payments) or **institutions** (regulations, covenants, ...)
- Local versus regional, or global (different **scales**)
- Efficiency and/or distribution (of **costs** and **benefits**)
- Economic (**cost**) efficiency *versus* **resource efficiency**
- **Environmental policy** *versus* **agricultural & trade policy**



# Supply chains and CE

- **Closed loop** supply chains
  - Take suitable actions to avoid, reduce, reuse or recycle existing waste (Winkler, 2011)
  - Go **beyond “isolated” past ‘end of pipe’** solutions
  - Need for supply chain management aid (**collaborative action**)
  
- Sustainable Supply Chain Networks (SSCNs) examples
  - **“waste” for proteins**: use of insects to ‘reuse’ human left-overs for producing food/feed/oil
  - Making of **biobased plastics** from sugar containing residuals from sugar beet and wheat milling industry



# Supply chains and CE-agriculture

- **What is needed for SSCNs** to properly function?
  - Two-level **planning** (goals, metrics)
  - LCA assessment of the relevant product/flow streams
  - Product, planning and design **in a SC context**
  - Product process **re-engineering**
  - Building a **business case** that commits participating firms along the chain
  - **Recognition of the 'added-values'** of CE/CA
- Follow an environmental or **ecological economics** approach to CE-thinking
  - Supporting **Pigovian taxes & subsidies**

# The CAP as vehicle to support CE agriculture

- 3 General and 9 specific **objectives** of the CAP, of which at least **3 are related to CE**
- Policy **instruments** available under proposed new CAP
  - **Enhanced conditionality** (extended baseline, including nutrient management plans/farm sustainability tool, **FST**)
  - **Direct payments** (various forms)
  - New green architecture (**Eco-schemes**)
  - **RDP** measures
- **New** policy instruments that could be developed
  - Eco-schemes
  - Additional Agri-environment and climate schemes

# Some observations for discussion

- The CE challenge is a broad one, including multiple nutrient flows (probably **climate theme** is most urgent)
- **Scale and trade issues** related to CE need more attention (local circles closure?, firms/industry/economy linkages?)
- CE/CA would benefit from a **Sustainable Supply Chain Network approach** focusing on promising themes
- Resource efficiency-improvement requires supporting **verdien-modellen** (involves economics/chain arrangements)
- CE/CA requires an **integrated policy approach** (env./agr/trade/anti-trust) supporting a **transition**
- **CAP** offers possibilities (especially **climate**; **CAP strategic plans**) for enhancing a circular Food System)

# Thanks

## Questions & discussion

